Claims

1. A control device for adjusting a relative angular position of a driven shaft, particularly a camshaft of an internal combustion engine, with following features:

   - the control device comprises a drive pinion that is rotatably connected to the shaft,

   - the control device comprises an adjusting element (1) for the angular adjustment of the drive pinion relative to the shaft, and further comprises chambers (2, 3) that are alternately supplied with hydraulic fluid,

   - the control device further comprises a control valve (6) for actuating the adjusting element (1), said control valve being connected to the chambers (2, 3) of the adjusting element (1) through pressure medium channels (4, 5),

   - the control valve (6) comprises a valve body (7) comprising working connections A and B for the pressure medium channels (4, 5), a delivery connection P for the supply of hydraulic fluid and a discharge connection T for the discharge of hydraulic fluid,

   - the control valve (6) further comprises a sliding valve control piston (8) for setting different hydraulic resistances W between the individual connections,

   - in a first adjusted position of the valve control piston (8), the connections between the connections P and A and between the connections B and T have a low resistance W and the connections between the connections P and B and between the connections A and T have a high resistance W,

   - in a second adjusted position of the valve control valve (8), the connections between the connections P and B and between the connections A and T

have a low resistance W and the connections between the connections P and A and between the connections B and T have a high resistance W,

- in a third adjusted position of the valve control valve (8), the connections between the connections A and T and between the connections B and T and the connections between the connections P and A and between the connections P and B have a high resistance W,

characterized in that

- in the third adjusted position, to compensate for fluid leakage V from the pressure medium channel (4) at the connection A, the resistance W in the connection between P and A is lower than the resistance in the connection between the connections P and B, while to compensate for fluid leakage V from the pressure medium channel (5) at the connection B, the resistance W in the connection between P and B is lower than the resistance in the connection between the connections P and A.

2. A control device according to Claim 1, **characterized in that** to compensate for fluid leakage V, the delivery connection P is connected by a connecting duct (14) to the pressure medium channel (4) of the connection A, or to the pressure medium channel (5) of the connection (B).

3. A control device according Claim 2, **characterized in that** the connecting duct (14) comprises a throttle (11).

4. A control device according to Claim 2, **characterized in that** to prevent a back flow to the delivery connection P, the connecting duct (14) comprises a one-way valve (15).

5. A control device according to Claim 1, **characterized in that** a groove (16) and control regions (17, 17') of the valve control piston (8) are arranged so that, in the third adjusted position, to compensate for fluid leakage V, the

resistance W between the connections P and A is different from the resistance W between P and B.

6. A control device according to Claim 1, **characterized in that** control edges (18, 18') of the valve body (7) or control regions (17, 17') of the valve control piston (8) are configured so that, in the third adjusted position, to compensate for fluid leakage V, the resistance W between the connections P and A is different from the resistance W between P and B.

7. A control device according to Claim 6, **characterized in that** the control edges (18, 18') or the control regions (17, 17') have different radii R.

8. A control device according to Claim 1, **characterized in that** when a design-related fluid leakage V takes place at the pressure medium channel (4) of the connection A, the resistance W at the connection between the connections P and A is low, and when a design-related fluid leakage V takes place at the pressure medium channel (5) of the connection B, the resistance W at the connection between the connections P and B is low.

9. A control valve for actuating an adjusting element (1) of a control device for adjusting a relative angular position of a driven shaft, particularly a camshaft of an internal combustion engine, according to Claims 1 to 8, with following features:

- the control valve comprises a valve body (7) that has two working connections A and B for pressure medium channels (4, 5) that are connected to chambers (2, 3) of the control device, and further comprises a delivery connection P for the supply of hydraulic fluid and a discharge connection for the discharge of hydraulic fluid,

- the control valve further comprises a sliding valve control piston (8) for setting differing hydraulic resistances W between the individual connections,

- in a first adjusted position of the valve control piston (8), the connections between the connections P and A and between the connections B and T have a low resistance W and the connections between the connections P and B and between the connections A and T have a high resistance W,

- in a second adjusted position of the valve control valve (8), the connections between the connections P and B and between the connections A and T have a low resistance W and the connections between the connections P and A and between the connections B and T have a high resistance W,

- in a third adjusted position of the valve control valve (8), the connections between the connections A and T and between the connections B and T and the connections between the connections P and A and between the connections P and B have a high resistance W,

characterized in that

- in the third adjusted position, to compensate for fluid leakage V from the pressure medium channel (4) at the connection A, the resistance W in the connection between P and A is lower than the resistance in the connection between the connections P and B, while to compensate for fluid leakage V from the pressure medium channel (5) at the connection B, the resistance W in the connection between P and B is lower than the resistance in the connection between the connections P and A.